



# How culture affects innovation in an organization

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**Both technology and innovation are considered major contributors to the competitiveness of companies and in exploiting opportunities in the market; however, too often the people processes are not given enough attention in transformation efforts - they are viewed as "HR processes" and technical leaders may not see the value of examining these areas early on as accelerators for change. The innovation culture framework presented in this paper is based on three thematic elements of innovation culture in organizations: Transformational Leadership, Organizational Climate / Environment, and Organizational Practices & Processes. The project tested and refined the framework by conducting a set of interviews, focus groups and workshop-based trials with participating commercial organizations. By focusing on the culture within an organization and coupling with other technology and innovation management efforts, leaders will have a more systemic understanding of how to sustain and increase the innovation capabilities of their organizations.**

## 1. Introduction and background

Innovation is essential for an organization to grow and survive in the competitive global market. Much has been written about the factors that contribute to an innovative organization. Clearly, technology is a primary focus and many companies invest heavily in R&D to develop ideas into products and services. However, the literature related to innovation is starting to focus on other essential elements that are often ignored or discounted by technical leaders – this includes concepts that relate the culture of an organization to its innovative abilities.

According to Schein (2017), an organization's culture reflects its values and beliefs that are developed over time as a result of problem solving and adaptation. The organizational culture (i.e. 'the way things are done around here' [Bower, 1966]) affects innovation in that certain values, beliefs and behaviors affect the processes and practices which companies use to generate new products and services. A brief review of the literature highlighted a number of culture elements that drive innovation in organizations. Three elements stood out which relate to the work this article describes: transformational leadership; organizational climate / environment; and organizational practices & processes

Leadership is always an essential element but the idea of transformational leadership highlights the need to transform, not just incrementally change, large aspects of an organization. The concept of transformational leadership was described by Burns (1978) as one where the "leaders and followers help each other to advance to a higher level of morale and motivation". According to Burns, the transformational leader advances organizational cultural change by providing a compelling vision, challenging goals and then serves as a role model for their team as they endeavour to accomplish the

mission. The concept was further expanded by Bass (1985) who outlined how this type of leadership encourages employees to come up with new and unique ideas, that is to innovate.

In addition to discussing organizational culture, which is often difficult to change, the current thought leadership also focuses on the *climate* which we define as the individual employee's day to day experiences at work. The following questions gleaned from the work of Robbins (2008) provide a sense of workplace climate: What do the employees encounter each day? Do they feel included in the decision-making process? Are their diverse perspectives valued? Do they face resistance to change? Are they encouraged to express their novel opinions or ideas? What barriers do they face each day trying to get their job done?

The climate is easier to assess than the culture and climate change can occur more readily than culture change. Culture tends to be rooted in legacy thinking and there's often much resistance to change especially if the organizational culture is founded on strong values and shared defining experiences or accomplishments. Leaders may not see the need to change but the literature is suggesting organizational climate is an area that can have a large impact on innovation. Page (2007) has shown diverse perspectives, interpretations, and mental models improve a teams' "collective ability to solve problems and make accurate predictions". In our experience, when problem solving and the accuracy of predicting outcomes improves, innovation often follows. However, if the climate encourages ideas from some and not from others, or if it simply doesn't feel safe to bring up new ideas, then the limitations can be significant. If mistakes are held against employees, then the risk of being wrong might not be seen as worth the risk of trying something new. The term psychological safety was coined by Edmondson (1999) to describe the concept of feeling safe to bring up new ideas or questioning current ways of doing business without fear of negative consequences (Edmondson, 1999). Baer and Frese (2003) found that taking initiative is easier when one feels safe within their company and work team.

Another area often overlooked relates to whether or not the organizational practices and processes - which include but are not limited to job selection, mentoring, performance feedback, and awards and recognition - support innovation initiatives. The work of Johnson and Scholes (1997) involving an "organizational culture web" supports the examination of an organization's power structure, control system, and routines and rituals in the diagnosis of a given culture. In the authors' experience working in complex technical organizations, managers often try to drive a new vision or strategy to promote innovation without assessing how their current practices and processes either support or inhibit the new direction. These systems need to be well aligned to ensure a greater chance of success. For example, are the desired behaviors aligned with existing constructs for performance management and recognition (Goffin & Mitchell, 2017)? Reviewing how teams and assignments are filled also provide insight into potential issues that limit innovative thinking (Page, 2007). Additionally, a systemic, bottoms-up approach is needed to identify the key obstacles or barriers that are limiting the organization.

## **2. Methodology**

An objective of this effort was to consider what technology and innovation management (TIM) tools could be used to bring about a more innovative work climate. One tool that is readily available is a diagnostic approach for assessing the TIM capabilities within an organization so that focused improvements can be made (Ilevbare *et al.* 2018).

The basis for the TIM Diagnostic is a framework which can be described as a set of 87 questions covering three themes and ten areas of significance to technology-based organizations. *Organizational Culture* is one of the ten areas of significance. Ten of the 87 questions are dedicated to the organizational culture portion of the TIM Diagnostic. The response to each question is facilitated by its adjoining five-level maturity model (Bessant *et al.*, 2005) which gives an indication of the knowledge or capability level of the organization with respect to the issue being explored by the

respective question.

An aim of the current work is to investigate the role of organizational culture in innovation and then update the people & organization part of the TIM Diagnostic as appropriate. To this end, an initial step was taken to couple the findings from the literature survey with project team member expertise working in large, complex technical organizations and then organize the key elements that relate organizational culture to innovation into a framework from which TIM tools could be developed. The framework presented in Table 1 addresses the following three key thematic areas of innovation culture in organizations:

- Transformational Leadership - the art of motivating a group of people to be innovative and create change that will positively impact the organization
- Organizational Climate / Environment - the experience of the employee in the work environment
- Organizational Practises & Processes - internal systems that enable consistent performance across the organization and provide a basis for cumulative, long-term benefits to the organization

Innovation Culture Framework: Themes & Key Elements	Reference
<b>Transformational Leadership</b> - the art of motivating a group of people to be innovative and create change that will positively impact the organisation	Bass (1985), Burns (1978) , (Goffin & Mitchell, 2017)
• <i>Openness to new ideas</i> - willingness to hear and consider new ideas or concepts	Goffin & Mitchell (2017), Johnson & Scholes (1997), Page (2007), Robbins (2008)
• <i>Diversity</i> - the unique characteristics, perspectives and experiences that employees bring to the workplace	Page (2007), Goffin & Mitchell (2017), Robbins (2008)
• <i>Leading Change</i> - the act of guiding an organisation from where it is now to where it wants to be	Kotter (2007)
• <i>Selecting Leaders</i> - attracting and identifying the leaders of the organisation	Do Nascimento Gambi & Boer (2015), Page (2007)
<b>Organisational Climate / Environment</b> - the experience of the employee in the work environment	Page (2007), Robbins (2008), Schein (2017)
• <i>Inclusiveness</i> - a workplace that makes employees with diverse perspectives feel valued, welcomed, and integrated	Page (2007), Qi et al. (2019), Robbins (2008)
• <i>Psychological Safety</i> -the freedom to express one's ideas, offer suggestions, and disagree with others without fear of reprisal or consequences	Baer and Frese (2003), Bergmann and Schaeppi (2016), Edmondson (1999), Goffin & Mitchell (2017)
• <i>Adaptability</i> - when an employee can be flexible and adjust to changing work conditions	Van Dam (2009)
• <i>Risk Taking</i> - the tolerance of uncertainty in the organisation	Goffin & Mitchell (2017), Robbins (2008)
<b>Organisational Practices and Processes</b> - internal systems that enable consistent performance across the organisation and provide a basis for cumulative, long-term benefits to the organisation.	Do Nascimento Gambi & Boer (2015), Johnson & Scholes (1997)
• <i>Opportunities</i> - assignments that may offer growth or advancement	Page (2007)
• <i>Mentoring/Coaching</i> - guiding others in the organisation and assisting with their learning and development	Do Nascimento Gambi & Boer (2015)
• <i>Feedback</i> - information on performance for the purpose of continuous improvement and development	Do Nascimento Gambi & Boer (2015), Goffin & Mitchell (2017), Johnson & Scholes (1997)
• <i>Recognition</i> - acknowledging an employee or team's contribution	Do Nascimento Gambi & Boer (2015), Goffin & Mitchell (2017), Johnson & Scholes (1997)
• <i>Limiting Barriers</i> - key obstacles that need to be addressed to enable innovation	

Table 1. Innovation Culture Framework

Transformational leadership goes beyond traditional leadership. As Burns stated, transformational leadership occurs when “leaders and followers help each other advance to a higher level of morale

and motivation.” A critical aspect of supporting one another is openness to new ideas. Leaders that are comfortable with and receptive to new ideas, from all levels of the organization, allow for new ideas to emerge. Diversity is another significant point - Page explains that when solving complex tasks, the more diverse a group, the more creative and innovation the solutions. As Hewlett *et al.* (2013) indicate, diverse companies out-innovate and out-perform others. The definition of diversity goes well beyond ethnicity and gender to also include aspects such as educational background and experience in various sectors of the economy - private, non-profit and government. Although transformational leadership provides the vision, strategy, and drive for change, Kotter (2007) suggests that neglecting to incorporate the change into the culture is a common mistake. To effectively impact the culture, leadership through the entire organization must understand and buy-in to the change. Leaders are the stewards of the culture because they set the tone and lead the people of the organization. Therefore, the selection of leaders is vital to the sustainability of the change. Leaders must “own” the change and not delegate it to other organizations within the company. Another key point Kotter makes is the need for alignment across the various managerial levels. If middle management is opposed to the proposed directional changes, a focused change management strategy will be needed to ensure this critical group understands and gets onboard with the new path.

With respect to climate, which for our purposes is defined as how employees’ experience the work environment, we found four critical factors. When organizational leaders explicitly strive to encourage the expression of diverse ideas, the voicing of minority opinions and then seek to ensure those ideas and opinions are integrated into the forward work of the organization they are exhibiting inclusiveness. As Qi *et al.* (2019) found, when employees believe that leaders showed more inclusiveness to their new ideas and concepts, they felt more valued and cared about by the organization and, in turn, increased their innovative behaviour. In addition, when employees feel that it is safe to voice their new ideas and concepts, seek feedback, take experimentation risks there is a sense of psychological safety (Edmondson, 1999) which can positively influence innovation outcomes. In fact, Google has identified psychological safety as the number one characteristic of successful high-performing and innovative teams (Bergmann and Schaeppi, 2016). Additionally, the ability of an employee to adapt to various situations is important to overall successful work outcomes, more specifically, Van Dam (2009) suggests that employee adaptability is relevant in situations including times of organizational change and high stress.

In addition to leaders and the climate impacting culture, there is another aspect we identify as practices and processes which are important to understand. Johnson and Scholes developed the Culture Web to identify and assess the factors that influence the culture. These include the organizational structure, systems, and processes that exist within the organization. We selected five focus areas for this paper.

The first four are focused on areas that directly impact employees. How are opportunities communicated and filled? What processes are used to fill these opportunities? If the same people are always chosen for often limited opportunities, is it any surprise they will be the individuals that receive the most visibility and are therefore more competitive when advancement opportunities arise? Secondly, how are employees mentored? Navigating an organization’s culture is complex. Mentoring can be a powerful tool in guiding others and accelerating one’s learning and development in this area. Third, is feedback commonplace within the organization or is “no news” good news? Feedback is critical to one’s learning and professional growth but often, managers reserve their comments for the annual or semi-annual performance appraisals. Employees may inadvertently continue to make the same mistakes without regular, non-threatening, and constructive feedback. Recognition is also important to assess. How are rewards administered? Do they motivate or demotivate innovation? Johnson’s and Scholes’ Culture Web help identify the areas an organization may want to focus on to dig deeper into their culture. Additionally, Do Nascimento Gambi & Boer (2015) indicate “people-oriented practices have a much stronger effect on innovation performance than technically oriented practices.” The four selected focus areas are often under the responsibility of Human Resources departments and as Goffin and Mitchell emphasize, “there is significant scope

for HR to be more involved in innovation.”

An additional and significant consideration when seeking to drive innovation is determining what hinders forward progress. In other words, what barriers to innovation are at work within current systems such as financial and quality systems. By identifying potential barriers, key obstacles to innovation can be addressed. Involving working level employees is essential in this area since they are experiencing the barriers each day but do not have the power or influence to make the changes necessary for improvement.

In addition to the TIM Diagnostic, other tools could be used to bring about a more innovative climate/culture. Using the Innovation Culture Framework as the basis, a culture mapping methodology was created based on the roadmapping strategic planning research conducted at the University of Cambridge Institute for Manufacturing. A frequently cited benefit of roadmapping is communication across functional and organizational boundaries.

The template shown in Figure 1 in a roadmap format links to a set of fundamental questions that apply in any strategic discussion of organizational culture:

- Perspective / viewpoint
  - External Trends & Internal Drivers (i.e. Why do we need to act?)
  - Innovation Culture Framework (i.e. What should we do?)
  - Capabilities (How should we do it?)
- Timing
  - Future State (Where do we want to go?)
  - Present State (Where are we now?)
  - Short-, Mid-, and Long-Term (How can we get there?)

The process of roadmap development brings together the various key stakeholders and perspectives, building consensus. With an appropriate level of facilitation, a ‘roadmapping for culture change’ approach may be used to support the communication and alignment of multiple perspectives that pertain to this complex topic.

### **3. Testing**

The STIM “Organizational Culture” project included conducting three leadership interviews and two focus groups with each of three participating STIM Consortium member companies who had volunteered in advance.

The interviews were conducted via conference call prior to the project team’s site visit. Doing the interviews in advance provided helpful insight regarding how the companies were approaching their innovation efforts which made the focus group and road mapping sessions more productive. The focus groups were conducted in person at the company worksites (see Figure 2).

The project explored how organizational climate and culture affects innovation using a set of questions developed by members of the STIM project team. All of the interview and focus group questions are aligned with the Innovation Culture Framework.






<b>Organisational Culture Roadmap</b>		<b>Present State (2019)</b>	<b>Short-Term (____)</b>	<b>Mid-Term (____)</b>	<b>Long-Term (____)</b>	<b>Future State (Vision)</b>
<b>Trends &amp; Drivers</b>	<b>External Trends</b> (political, economic, societal, technological, legal, environmental)					
	<b>Internal Drivers</b> (company vision, mission, objectives, etc.)					
<b>Transformational Leadership</b>	<b>Openness to new ideas</b> (willingness to hear and consider new ideas or concepts)					
	<b>Diversity</b> (the unique characteristics, perspectives and experiences that employees bring to the workplace)					
	<b>Leading change</b> (guiding the organisation from where it is now to where it wants to be)					
	<b>Selecting leaders</b> (attracting and identifying the leaders of the organisation)					
<b>Organisational Practices &amp; Processes</b>	<b>Opportunities</b> (assignments that may offer growth or advancement)					
	<b>Mentoring / Coaching</b> (guiding others in the organisation and assisting with their learning and development)					
	<b>Feedback</b> (information on performance for the purpose of continuous improvement and development)					
	<b>Recognition</b> (acknowledging employee and team contributions)					
	<b>Limiting barriers</b> (key obstacles that need to be addressed to sustain a culture of innovation)					
<b>Organisational Climate</b>	<b>Inclusiveness</b> (a workplace where employees in the work environment feel valued, welcomed and integrated)					
	<b>Psychological safety</b> (the freedom to express ideas, offer suggestions, and disagree with others without fear of reprisal or consequences)					
	<b>Adaptability</b> (when employees can be flexible and adjust to changing work conditions)					
	<b>Risk Taking</b> (the tolerance of uncertainty in the organisation)					
<b>Capabilities</b>	Leadership development, training, performance measures, communication strategies, etc.					

Figure 1. Innovation culture roadmap template

For example, the focus group sessions included the following questions:

- ‘Do employees feel comfortable bringing up issues that are contrary to established norms?’ (*Climate/Environment: Psychological Safety*)
- ‘How do leaders encourage new ideas?’ (*Leadership: Openness to new ideas*).
- ‘How do employees receive feedback on innovative ideas?’ (*Practices and Processes: Feedback*)

After each interview and focus group session, informal feedback was then requested to assess the experiences of the participants and to guide further refinement of the questions asked and the process employed. These questions aim to assess whether the tool is easy to use, comprehensive in coverage and delivers useful information to the company:

- What do you think of the questions asked – first impressions? [pertaining to usefulness/feasibility/usability]
- How do you find the structure and flow of the questions? [usability/usefulness]
- Were the individual questions clear? [usability]
- Are any areas/topics missing in your view? [comprehensiveness (usefulness)]
- General comments [usefulness/usability]

Table 2 includes a summary of the feedback from the interviews and focus groups.



Figure 2. In-company focus group and roadmap sessions

Question	Interview Feedback Summary	Focus Group Feedback Summary
What do you think of the questions asked?	The questions were thought provoking; however, interviewees expressed a desire to think through the questions in advance (the questions were not presented in advance of the interviews).	Suggestion to expand beyond technical groups to gain a more thorough view of the larger organisation. The frame of reference needs to be defined. (e.g. individual, business unit, organization as whole?)
How did you find the flow of the questions?	Terms were defined and provided to the interviewees which proved helpful. The order of the questions seemed sensible with concepts building on one another.	Overall flow was fine. Perhaps discussing the <i>barriers</i> questions earlier in the focus group.
Were the questions clear?	The interviewees indicated some questions surprised them. They are accustomed to addressing technology topics but not necessarily topics related to leadership, culture, and organizational values. Some delegates asked for additional terms to be defined (e.g. "opportunities", "leverage" and "challenging assignments")	Focus group participants expressed the need to define multiple terms. Many terms were subject to interpretation.
Are any areas/topics missing in your view?	Several of the interviewees were wondering why we didn't ask about other related topics such as innovation management and technology management.	Participants suggested additional questions related to communication flow, how existing culture impacts innovation, and what levers are used today within the organizations.
Do you have any general comments?	The interviewees generally appreciated the interviews and liked the structured format. All of the interviewees expressed interest in the outcomes.	Focus groups expressed a desire to include more people within the organization to obtain a more thorough perspective. Differences in culture exist in multi-cultural organizations; the focus group format was well received.

Table 2. Interview and focus group feedback summary

The culture roadmap methodology was tested by conducting a set of road mapping sessions that were hosted by three STIM Consortium member companies. In order to save travel time and expenses, the roadmapping activity was limited to a two-hour timeframe in the afternoon following the morning focus group sessions.

After the morning sessions were completed, the STIM company point of contact was given the opportunity to sponsor either a general innovation culture roadmap or more focused roadmap in response to a particular ambition or challenge. In all three cases, the sponsor opted to focus the



roadmapping activity one or two preliminary findings that emerged from the morning focus group sessions (for instance, one session addressed the question, “How do we mature into a more inclusive organization?”).

The methodology included the following process steps:

1. Identify the (external or internal) trend/driver for culture change
2. Define the culture improvement ‘future state’ for the organization (link to at least one trend/driver)
3. Describe the culture area ‘current state’
4. Articulate the culture improvement idea (link to at least one culture improvement ‘future state’ and at least one culture area ‘present state’)

After each roadmap session, the project team sought feedback (Table 3) on the overall facilitation approach and the process steps that were used to develop the roadmap.

Question	Summary
<b>What did you like about the workshop?</b>	Structured approach, good step-by-step walkthrough of the roadmapping process. Framework and tempo was appropriate for the topics being discussed. Good way of addressing some of the internal issues in a friendly and interactive session.
<b>Do you have any constructive criticism to offer?</b>	The template was a bit overwhelming and suggested improving the introduction to the tool. Some of the delegates thought the topics could have included more 'open questions' to get the discussion going. Also, it would be nice to issue some materials in advance to that the participants may engage their thinking ahead of the session.
<b>Do you have any questions?</b>	Most of the questions revolved around what happens after the workshop (e.g. How are the results going to be implemented), which is beyond the scope of the STIM project.
<b>Any ideas to improve the workshop outcomes?</b>	Simplify the template and issue before the workshop along with definitions and other preparatory materials. Allow more time to introduce the process. Ask people who don't usually get asked to participate.

Table 3. Roadmap session feedback summary

#### 4. Findings

The leadership interviews and focus groups provided insight into the way culture impacts innovation. For the most part, the individual interviews and focus groups generated similar results in that participants were engaged and interested in the topic of innovation. Interviewing a subset of leaders before conducting the focus groups aided in the facilitator’s knowledge of the individual company perspectives. When conducting the focus groups, it became clear where potential disconnects exist within an organization (for instance, leadership view of strategy/vision versus employee view of implementation).

The focus groups were organized by organizational level (e.g. first line supervisors) or job types within the company. Additionally, one company chose to invite participants with diverse skillsets. The employee focus groups revealed a great deal of energy and engagement and were particularly helpful in illustrating similar experiences across the company. The participants appreciated hearing their experiences were similar to others. In fact, this realization may prove useful in future efforts to assess innovation barriers or develop a cohort of change agents for specific initiatives.

The participant feedback process produced a number of useful comments that indicated that the definitions provided were useful and allowed the participants to better understand the intent of the interview / focus group questions. There were also a few recommendations regarding ways to increase overall question clarity by changing a few of the word choices. For instance, the terms “outsiders”

and “insiders” were not universally understood; however, the terms did clearly resonate for some. Perhaps diving a little further into the organizational culture will determine whether this distinction is limiting innovative solutions since some may not feel included or able to contribute fully. This concept relates to the topic of psychological safety which did clearly resonate with many participants.

Based on the feedback, some suggested specific questions related to current state of collaboration would be helpful to determine a baseline. Others felt the focus groups were too limiting in that they primarily focused on the technologists within an organization. It is clear a more accurate and useful assessment could be developed if multiple focus groups were conducted to gather information from across the organization to fully prioritize the most important levers of increasing innovation.

Roadmapping sessions were well received in general and the process steps appeared to be clearly understood in general; however, many of the participants felt a two-hour timetable for this exercise was insufficient (in the future, a half-day will be allocated for these sessions).

In addition, it should be emphasized that, for roadmap activities which address a particular ambition or challenge, it is important to spend sufficient time to agree on the ‘exam question’ and also consider whether the appropriate staff members have been invited to participate.

## **5. Implications to industry and academia**

The methodology used in this STIM project has implications for relevant use in industry. By focusing on the culture within an organization, there is a greater chance of success when initiating innovation in an organization. There is a natural tendency for organizations to focus exclusively on the technology piece but without the holistic view, change efforts are limited. Combining the findings from the culture and coupling with other technology and innovation management efforts, leaders will have a more systemic understanding of how to sustain and increase the innovation capabilities of their organizations.

## **6. Conclusion**

Too often the people processes are not given enough attention in transformation efforts mainly because they are viewed as “HR processes” and technical leaders may not see the value of examining these areas early on as accelerators for change. This project attempted to bring three aspects of culture to the forefront to illustrate the impact of culture on innovation.

The organizational culture (i.e. ‘the way things are done around here’ affects innovation in that certain values, beliefs and behaviors affect the processes and practices which companies use to generate new products and services. The innovation culture framework presented in this paper is based on three thematic elements of innovation culture in organizations: Transformational Leadership, Organizational Climate / Environment, and Organizational Policies & Practices. The project tested and refined the framework by conducting a set of interviews, focus groups and workshop-based trials with participating commercial organizations.

By focusing on the culture within an organization and coupling with other technology and innovation management efforts, leaders will have a more systemic understanding of how to sustain and increase the innovation capabilities of their organizations.

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